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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/512,119	10/21/2004	Matthias Wendt	DE 020103	2393

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EXAMINER	
ROSENAU, DEREK JOHN	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/512,119	WENDT ET AL.	
	Examiner	Art Unit	
	Derek J. Rosenau	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (US 4965532) in view of Buice et al. (US 5595330).

3. With respect to claim 10, Sakurai discloses a starting-process controller for starting a piezomotor (Fig 3), having a voltage controlled oscillator (VCO) (item 17), and a power output stage (item 13), wherein the oscillator generates the control signals required for the output stage, the motor current that flows when the piezomotor is driven is measured and compared with the phase of the drive voltage in a phase comparator (items 14 and 15), the output signal from the phase comparator is a measure for the phase difference at the time between current and voltage, a phase-locked loop filter (item 16) smoothes the phase-difference signal, the smoothed signal controls the oscillator, and an adjustable time-delay element (item 12), by which the phase angle between the voltage applied to the motor and the motor current is changed in start-up operation from an initially large starting angle towards a smaller angle at an operating point (column 7, line 48 through column 8, line 16). With respect to the adjustable time delay element, the device of Sakurai begins with a large phase angle of $\Delta\theta$, and adjusts the phase angle between voltage and current until it reaches a phase angle of zero. The

phase angle is adjusted by adjusting the reference frequency, which is phase locked with the voltage, until a phase angle of zero is reached between voltage and current.

Sakurai does not disclose expressly that the resonance converter converts the stepped output voltage from the power output stage into a sinusoidal voltage at its output, that the piezomotor is driven by the sinusoidal voltage from the resonance converter.

Buice et al. teaches a power supply that for an ultrasonic device that uses a resonance converter to convert a square wave into a sine wave, the output of which drives the ultrasonic transducer (Fig 4A, item 123).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the resonance converter of Buice et al. with the ultrasonic transducer driving circuit of Sakurai for the benefit of being able to more readily use digital control with the device.

4. With respect to claim 11, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10. Sakurai discloses that the reduction in phase angle during the start-up process is in the form of a ramp (column 7, lines 56-62). The reference frequency, which is phase locked with the voltage, is varied monotonously, which results in the phase angle being varied in the form of a ramp.

5. Claims 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai in view of Buice et al. in further view of Katsuragawa (US 5661359).

6. With respect to claim 12, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the reduction in phase angle during the start up process is effected by means of a digital counter.

Katsuragawa teaches a vibration motor device that controls the driving frequency using a counter (Fig 1, item 18) to update phase difference information.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing an input that more readily provides updated phase delay information to the computer.

7. With respect to claim 13, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the starting value of the counter fixes the phase angle.

Katsuragawa teaches a vibration motor device that controls the driving frequency using a counter (Fig 1, item 18) to update phase difference information. Although Katsuragawa does not discuss that the starting value of the counter fixes the phase angle, the counter must have a starting value, and this value would be associated with a phase delay.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing an input that more readily provides updated phase delay information to the computer.

8. With respect to claim 14, the combination of Sakurai, Buice et al., and Katsuragawa discloses the starting-process controller as claimed in claim 12. Katsuragawa discloses a vibration motor device that controls the driving frequency using a counter to update phase difference information. Although Katsuragawa does not discuss that the phase-angle is fixed by the final count reached by the counter, there must be a final count reached by the counter, and this value would be associated with a phase delay.

9. With respect to claim 15, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the start-up process is determined by means of a counter.

Katsuragawa teaches a vibration motor device that controls the driving frequency using a counter (Fig 1, item 18) to update phase difference information.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing an input that more readily provides updated phase delay information to the computer.

10. With respect to claim 16, the combination of Sakurai, Buice et al., and Katsuragawa discloses the starting-process controller as claimed in claim 15. Katsuragawa discloses a vibration motor device that controls the driving frequency using a counter to update phase difference information. This phase difference

information is based on comparing the two measured waveforms, and therefore there must be a count of the oscillations of those waveforms.

11. With respect to claim 17, the combination of Sakurai, Buice et al., and Katsuragawa discloses the starting-process controller as claimed in claim 15. Katsuragawa discloses a vibration motor device that controls the driving frequency using a counter to update phase difference information. In order to determine this information, a clock signal (Fig 1, item 17) is used.

12. With respect to claim 18, the combination of Sakurai, Buice et al., and Katsuragawa discloses the starting-process controller as claimed in claim 15. Katsuragawa discloses a vibration motor device that controls the driving frequency using a counter to update phase difference information. The counts made by the computer are input to a computer, and this information is used in changing the phase delay (Fig 4, steps 60-65).

13. With respect to claim 19, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the counts are converted into the value for setting the phase delay.

Katsuragawa teaches a vibration motor device that controls the driving frequency using a counter (Fig 1, item 18) to update phase difference information. The counts made by the computer are input to a computer, and this information is used in changing the phase delay (Fig 4, steps 60-65).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing an input that more readily provides updated phase delay information to the computer.

14. With respect to claim 20, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the counts are converted into values for setting the phase delay by means of a table in a memory device (RAM or ROM).

Katsuragawa teaches a vibration motor device that controls the driving frequency using a counter (Fig 1, item 18) to update phase difference information. The values input to the computer from the counter are compared with predetermined values stored in the computer (Fig 4, steps 60-65) in determining how to change the frequency in order to decrease the phase angle.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the counter of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing an input that more readily provides updated phase delay information to the computer.

15. With respect to claim 21, the combination of Sakurai and Buice et al. discloses the starting-process controller as claimed in claim 10.

Neither Sakurai nor Buice et al. disclose expressly that the starting process is monitored by a programmable device such as a microprocessor or a DSP.

Katsuragawa teaches a vibration wave motor device that controls adjusts the phase angle through the use of a program run on a computer (Fig 1, item 2).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the computer of Katsuragawa with the ultrasonic transducer driving circuit of Sakurai as modified by Buice et al. for the benefit of providing a means of digitally controlling the operation of the ultrasonic transducer.

16. With respect to claim 22, the combination of Sakurai, Buice et al., and Katsuragawa discloses the starting-process controller as claimed in claim 21. Katsuragawa discloses a vibration wave motor device that controls adjusts the phase angle through the use of a program run on a computer (Fig 1, item 2). The primary input in determining how to adjust the phase delay is the updated phase delay information from the counter. The counter digitally inputs the updated phase delay information to the computer.

Response to Arguments

1. Applicant's arguments, see Applicant's Arguments/Remarks Made in an Amendment, filed 5/15/06, with respect to the abstract have been fully considered and are persuasive. The objection to the abstract has been withdrawn.

2. Applicant's arguments with respect to claim 10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is 571-272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derek J Rosenau
Examiner
Art Unit 2834

DJR
2/7/06

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